[EXTERNAL MAIL]H2S in Flare 8 - 4/19/21

Maria.Aloyo <Maloyo@lbenergy.com>

Mon 4/19/2021 9:40 AM

To: Verline Marcellin <verline.marcellin@dpnr.vi.gov>
Cc: Catherine.Elizee <CElizee@lbenergy.com>; Craig.Miller <CTmiller@lbenergy.com>

Good morning Verline,

At 7am we exceeded the H2S 3-hr rolling limit of 162 ppm at the No. 8 Flare. We are investigating and will follow up in writing with our findings.

Thanks,

Maria C. Aloyo
Environmental Specialist
Limetree Bay Refining, LLC
Limetree Bay Terminals, LLC
O: 340-692-3781
C: 340-514-8087
1 Estate Hope | Christiansted, VI 00820-5652

[EXTERNAL MAIL]H2S in Flare 8 exceedance - Notification

Catherine.Elizee <CElizee@lbenergy.com>

Mon 4/19/2021 5:12 PM

To: Verline Marcellin <verline.marcellin@dpnr.vi.gov>
Cc: Craig.Miller <CTmiller@lbenergy.com>; Joyce.Wakefield <jwakefield@lbenergy.com>; Maria.Aloyo <Maloyo@lbenergy.com>

Hi Verline,
We just exceeded the 3-hr average limit for H2S in Flare 8 at 5pm. We are investigating and will send a followup letter.
Thank you

Catherine Elizee
Environmental Superintendent
Limetree Bay Refining, LLC
Limetree Bay Terminals, LLC
O: 340-692-3073
C: 340-690-6603
1 Estate Hope | Christiansted, VI 00820-5652

[EXTERNAL MAIL]H2S in Fuel Gas exceedance - Notification

Catherine.Elizee <CElizee@lbenergy.com>

Tue 4/20/2021 7:46 AM

To: Verline Marcellin <verline.marcellin@dpnr.vi.gov>
Cc: Craig.Miller <CTmiller@lbenergy.com>; Joyce.Wakefield <jwakefield@lbenergy.com>; Maria.Aloyo <Maloyo@lbenergy.com>

Good morning Verline,
We have an exceedance of the 162ppm 3-hr average limit of H2S in the fuel gas that began at 6am this morning. We will investigate and followup with a letter.
Thank you

Catherine Elizee
Environmental Superintendent
Limetree Bay Refining, LLC
Limetree Bay Terminals, LLC
O: 340-692-3073
C: 340-690-6603
1 Estate Hope | Christiansted, VI 00820-5652

[EXTERNAL MAIL]H2S in Fuel Gas Exceedance-Notification

Joyce.Wakefield <JWakefield@lbenergy.com>

Thu 4/22/2021 4:55 AM

To: Verline Marcellin <verline.marcellin@dpnr.vi.gov>
Cc: Catherine.Elizee <CElizee@lbenergy.com>; Maria.Aloyo <Maloyo@lbenergy.com>

Good Morning Verline,
We exceeded the H2S limit in the fuel gas system around 4 AM this morning. We are currently investigating. Please accept this as our notification and we will follow-up with a letter.

Joyce Wakefield
Environmental and Wildlife Specialist
Limetree Bay Refining & Terminals, LLC
O: 340-692-3205
C: 340-690-5296
1 Estate Hope | Christiansted, VI 00820-5652

[EXTERNAL MAIL]H2S in Flare Header

Maria.Aloyo <Maloyo@lbenergy.com>

Fri 4/23/2021 10:04 AM

To: Verline Marcellin <verline.marcellin@dpnr.vi.gov>
Cc: Catherine.Elizee <CElizee@lbenergy.com>; Craig.Miller <CTmiller@lbenergy.com>

Good morning Verline,

As Catherine mentioned in the EPCRA notification yesterday evening, the H2S in the flare was decreasing. However, at approximately 9PM, the H2S in the flare increased. We are actively investigating.

Thanks,

Maria C. Aloyo
Environmental Specialist
Limetree Bay Refining, LLC
Limetree Bay Terminals, LLC
O: 340-692-3781
C: 340-514-8087
1 Estate Hope | Christiansted, VI 00820-5652

LIMETREE BAY
REFINING, LLC

April 26, 2021

Mr. Austin F. Callwood, Director
Division of Environmental Protection
Department of Planning & Natural Resources
45 Mars Hill
Frederiksted, V.I. 00840-4474

SUBJECT: No. 8 Flare H_2S Exceedances – April 19, 2021 to April 22, 2021

Dear Mr. Callwood:

This letter is submitted in compliance with Condition No. 2.4.5.1 of Limetree Bay Title V permit as a follow-up to the email notifications to Ms. Verline Marcellin of the Division of Environmental Protection on April 19, 2021 at 9:41 AM and 5:13 PM regarding the H_2S exceedances at the No. 8 Flare.

The Continuous Emissions Monitoring System (CEMS) recorded H_2S concentrations in the No. 8 Flare header in excess of 0.1 gr/dscf (162 ppm) based on a 3-hr rolling average (ref. Title V permit condition 3.2.5.5 & 3.2.5.6) intermittently from April 19, 2021 to April 22, 2021.

The following table provides 1-hr and 3-hr H_2S concentrations at the No. 8 Flare during the exceedance events.

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/19/21	05:00	71.9
04/19/21	06:00	158.4
04/19/21	07:00	162.7
04/19/21	08:00	162.5
04/19/21	09:00	76.1
04/19/21	10:00	106.9
04/19/21	11:00	102.5
04/19/21	12:00	103.9
04/19/21	13:00	73.8
04/19/21	14:00	92.8
04/19/21	15:00	84.7
04/19/21	16:00	557.8
04/19/21	17:00	2,736.7
04/19/21	18:00	3,094.9
04/19/21	19:00	2,630.7
04/19/21	20:00	1,844.4
04/19/21	21:00	9,569.6
04/19/21	22:00	20,675.3
04/19/21	23:00	31,546.5
04/20/21	00:00	36,997.7
04/20/21	01:00	39,475.7
04/20/21	02:00	38,784.1
04/20/21	03:00	26,777.5
04/20/21	04:00	13,932.6

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/20/21	05:00	2,828.1
04/20/21	06:00	2,339.0
04/20/21	07:00	2,122.1
04/20/21	08:00	2,172.8
04/20/21	09:00	1,788.1
04/20/21	10:00	1,828.2
04/20/21	11:00	1,748.4
04/20/21	12:00	1,517.4
04/20/21	13:00	1,348.4
04/20/21	14:00	1,296.9
04/20/21	15:00	1,540.2
04/20/21	16:00	2,148.4
04/20/21	17:00	2,533.5
04/20/21	18:00	2,405.3
04/20/21	19:00	1,775.0
04/20/21	20:00	1,384.2
04/20/21	21:00	1,295.6
04/20/21	22:00	1,309.0
04/20/21	23:00	1,356.3
04/21/21	00:00	1,227.1
04/21/21	01:00	1,289.7
04/21/21	02:00	2,167.7
04/21/21	03:00	2,147.5
04/21/21	04:00	2,272.4

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/21/21	05:00	1,389.2
04/21/21	06:00	1,572.0
04/21/21	07:00	1,697.5
04/21/21	08:00	1,798.9
04/21/21	09:00	1,888.2
04/21/21	10:00	1,663.2
04/21/21	11:00	1,620.7
04/21/21	12:00	1,449.0
04/21/21	13:00	1,322.6
04/21/21	14:00	1,112.2
04/21/21	15:00	939.7
04/21/21	16:00	1,031.9
04/21/21	17:00	1,200.2
04/21/21	18:00	1,290.6
04/21/21	19:00	1,047.3
04/21/21	20:00	794.1
04/21/21	21:00	714.9
04/21/21	22:00	663.3
04/21/21	23:00	454.1
04/22/21	00:00	202.3
04/22/21	01:00	220.0
04/22/21	02:00	487.7
04/22/21	03:00	930.7
04/22/21	04:00	1,260.3

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Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/22/21	05:00	1,612.1
04/22/21	06:00	2,051.2
04/22/21	07:00	2,701.0
04/22/21	08:00	3,328.4
04/22/21	09:00	3,342.6

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/22/21	10:00	4,046.5
04/22/21	11:00	3,451.0
04/22/21	12:00	2,961.5
04/22/21	13:00	1,361.1
04/22/21	14:00	866.8

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/22/21	15:00	472.5
04/22/21	16:00	197.1
04/22/21	17:00	39.4

On April 19th, the Coker unit was starting up and off gases generated were vented to the flare until the wet gas compressor was successfully brought online. The wet gas compressor was brought online around 1:34 AM on April 20th and the H_2S in the flare decreased as startup progressed. Since the H_2S level did not decrease below the emission limit once startup of the wet gas compressor was complete, Operations immediately began their search for another source of the H_2S by methodically isolating each unit's battery flare valves. On April 21st, Operations discovered a malfunctioning pressure safety valve (PSV) on the low-pressure flash drum (D-4603) at the No. 6 Distillate Desulfurizer Unit (DD6). The PSV was taken out of service for maintenance.

If you have any questions or need additional information, please contact Maria Aloyo at (340) 692-3781.

Sincerely,

Neil Morgan
VP, Refinery and General Manager
Limetree Bay Refining, LLC

Electronic copy: Verline Marcellin (DPNR)

LIMETREE BAY
REFINING, LLC

April 30, 2021

Mr. Austin F. Callwood, Director
Division of Environmental Protection
Department of Planning & Natural Resources
45 Mars Hill
Frederiksted, V.I. 00840-4474

SUBJECT: No. 8 Flare H_2S Exceedances – April 22- 23, 2021

Dear Mr. Callwood:

This letter is submitted in compliance with Condition No. 2.4.5.1 of Limetree Bay Title V permit as a follow-up to the email notifications to Ms. Verline Marcellin of the Division of Environmental Protection on April 23, 2021 at 10:04 AM regarding the H_2S exceedances at the No. 8 Flare.

The Continuous Emissions Monitoring System (CEMS) recorded H_2S concentrations in the No. 8 Flare header in excess of 0.1 gr/dscf (162 ppm) based on a 3-hr rolling average (ref. Title V permit condition 3.2.5.5 & 3.2.5.6) from April 22, 2021 to April 23, 2021.

The following table provides 3-hr H_2S concentrations at the No. 8 Flare during the exceedance event.

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/22/21	17:00	39.4
04/22/21	18:00	39.4
04/22/21	19:00	39.4
04/22/21	20:00	39.4
04/22/21	21:00	532.3
04/22/21	22:00	1,030.0
04/22/21	23:00	1,543.7
04/23/21	00:00	1,526.8
04/23/21	01:00	1,722.6
04/23/21	02:00	1,958.0
04/23/21	03:00	2,324.7

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/23/21	04:00	2,505.2
04/23/21	05:00	2,590.8
04/23/21	06:00	2,626.7
04/23/21	07:00	3,636.7
04/23/21	08:00	20,495.0
04/23/21	09:00	55,482.2
04/23/21	10:00	85,449.0
04/23/21	11:00	91,649.0
04/23/21	12:00	61,742.3
04/23/21	13:00	33,498.8
04/23/21	14:00	11,174.2

Source		FLARE08
Parameter		H2SPPMD
Unit		(PPM)
04/23/21	15:00	7,459.6
04/23/21	16:00	5,971.0
04/23/21	17:00	7,167.0
04/23/21	18:00	6,291.3
04/23/21	19:00	5,226.0
04/23/21	20:00	3,428.2
04/23/21	21:00	2,767.3
04/23/21	22:00	1,757.9
04/23/21	23:00	797.7
04/24/21	00:00	90.2
04/24/21	01:00	62.2

At approximately 4:45 AM on April 23, 2021, the No. 4 Sulfur Recovery Unit (4SRU) tripped due to both "fire-eye" flame scanners not detecting a flame. At about 5:29 AM, the 4SRU was re-lit and at 7:07 AM the Clean Acid Gas (CAG) control valve at 4SRU started to slowly open but not quick enough to alleviate the pressure in the CAG header. Due to the backpressure in the CAG header, a pressure safety valve (PSV) at the No. 5 Amine Regeneration Unit (5ARU) relieved to the No. 8 Flare. The SO_2 generated from the combustion of H_2S in the flare header caused odors which impacted our neighbors. Further investigation showed that there was another malfunctioning PSV at the No. 6 Distillate Desulfurizer Unit (DD6), contributing to the elevated H_2S before the 4SRU trip event. The PSV was taken out of service for maintenance.

To immediately reduce the H_2S in the flare header, the following corrective actions were implemented:

- H_2S producing units were shutdown or placed on circulation to reduce the load on the amine regeneration system and the sulfur plant.
- 5ARU was shut down because the PSV continued to leak to the flare even below the PSV setpoint.
- Respond to odor complaints.

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Operations have implemented or are in the process of implementing the following measures including, but not limited to:

- Implement the H_2S load shed procedure - Completed;
- Run both 3SRU and 4SRU at the same time, where the lead SRU receives CAG or Ammonia Acid Gas and the lag SRU is on standby in the event the lead SRU trips - Completed;
- Manufacturer (Honeywell) scheduled to investigate and tune the existing "fire-eye" flame scanners – In progress;
- Program SRU "fire-eye" scanner delay times for both SRUs – In Progress
- Re-range three pressure transmitters in the amine regeneration units and SRUs to 10psi above PSV setpoints – Completed;
- Add electronic indication of acid gas inlet chopper valves in the plant's control system and plant historian database – In progress

If you have any questions or need additional information, please contact Maria Aloyo at (340) 692-3781.

Sincerely,

Neil Morgan
VP, Refinery and General Manager
Limetree Bay Refining, LLC

Electronic copy: Verline Marcellin (DPNR)